What is claimed is:

1. An output monitor/control device, comprising:

a Mach-Zehnder circuit that receives a light beam, branches the received light beam into two light beams having a phase difference of 180°, and transmits each of the light beams, exhibiting a periodic optical transmittance-optical frequency characteristic with a period of a frequency interval corresponding to a predetermined free spectral range;

first and second photoelectric conversion means each for receiving a respective one of two light beams that have emerged from said Mach-Zehnder circuit; and

a calculation means for calculating a predefined discrimination formula to evaluate a wavelength change in each of said light beams based on conversion outputs of said first and second photoelectric conversion means, wherein said conversion outputs change responsively to a wavelength change in accordance with said optical transmittance-optical frequency characteristic.

2. An output monitor/control device according to claim 1, wherein said Mach-Zehnder circuit is adjusted in advance such that the wavelength to be controlled is included in a wavelength region that corresponds to a frequency region in which the optical transmittance-optical frequency characteristic curve of said Mach-Zehnder circuit changes steeply.

3. An output monitor/control device according to claim 2, wherein said discrimination formula is the ratio of the conversion output of either one of said first and second photoelectric conversion means to the sum of conversion outputs of said first and second photoelectric conversion means.

4. An output monitor/control device according to claim 2, wherein said discrimination formula is the ratio of the difference between the conversion outputs of said first and second photoelectric conversion means to the sum of the conversion outputs of said first and second photoelectric conversion means.

5. An output monitor/control device according to claim 2, further comprising wavelength control means for detecting change in wavelength based on the calculation result obtained by said calculation means and adjusting wavelength to a preset value.

6. An output monitor/control device according to claim 3, further including:

a level calculation means for calculating the sum of the conversion outputs of said first and second photoelectric conversion means to evaluate an intensity variation in the total amount of the light that emerges from said Mach-Zehnder

circuit; and

a level adjusting means for compensating for variation in the level of light that emerges from said Mach-Zehnder circuit based on said sum of the conversion outputs.

7. An output monitor/control device according to claim 2, wherein the wavelength interval that corresponds to said free spectral range is identical to the wavelength interval of the ITU (International Telecommunications Union) grid.

8. An optical communication system, comprising:

an optical transmission means for transmitting optical signals of different wavelengths in parallel;

a multiplexer having an arrayed waveguide diffraction grating for performing wavelength division multiplexing of said optical signals transmitted by said optical transmission means;

an optical transmission path for transmitting the wavelength division multiplexed optical signal provided by said multiplexer;

nodes arranged as appropriate midway on this optical transmission path;

a demultiplexer having an arrayed waveguide diffraction grating for receiving a multiplexed optical signal transmitted by way of said optical transmission path, and demultiplexes said multiplexed optical signal into optical signals of respective wavelengths; and

an optical receiver for receiving optical signals of each wavelength demultiplexed by said demultiplexer; wherein said optical transmission means and said nodes each have an output monitor/control device; said output monitor/control device comprising:

an arrayed waveguide diffraction grating for receiving the wavelength-division-multiplexed optical signal and demultiplexing the multiplexed optical signal to generate demultiplexed optical signals;

Mach-Zehnder circuits each of which receives a demultiplexed optical signal, branches the demultiplexed optical signal into two light beams having a phase difference of 180°, and transmits each of these light beams, exhibiting a periodic optical transmittance-optical frequency characteristic having a period of a frequency interval that corresponds to a predetermined free spectral range;

sets of first and second photoelectric conversion means each for receiving a respective one of said two light beams that have emerged from said Mach-Zehnder circuit;

calculation means each for calculating a predefined discrimination formula for evaluating a wavelength change in each of said light beams based on conversion outputs of said first and second photoelectric conversion means, wherein said conversion outputs change responsively to a wavelength change in accordance with said optical transmittance-optical frequency characteristic; and

a wavelength control means for detecting changes in

wavelengths based on calculation results obtainded by said calculation means and adjusting the wavelengths to preset values.

9. An optical communication system according to claim 8, further comprising:

a level control means for compensating for variation in the level of optical signals supplied from said Mach-Zehnder circuit based on the calculation result of the sum of conversion outputs from said first and second photoelectric conversion means calculated by said calculation means.

10. A layout of a package in which are mounted a Mach-Zehnder circuit element and two photodiodes each to receive a respective one of two light beams supplied from said Mach-Zehnder circuit element; wherein:

a Peltier element of substantially the same area as the Mach-Zehnder circuit is mounted on a substrate;

a copper plate for thermal exchange between said Peltier element and said Mach-Zehnder circuit element having substantially the same area as said Peltier element is arranged on said Peltier element, a trench for receiving a temperature detector to measure the temperature of said Mach-Zehnder circuit is provided on the surface of said copper plate, and the temperature detector is embedded in this trench;

said Mach-Zehnder circuit element is arranged on said

copper plate;

a photodiode-mounting submount is arranged on said substrate in the vicinity of the output area of said Mach-Zehnder circuit, said two photodiodes are secured onto the submount, and lead wires for leading out the output currents of said photodiodes are led from the submount to an external circuit;

a drive submount is provided on said substrate to hold lead wires: lead wires for driving said Peltier element are led from an external circuit by way of said drive submount and connected to said Peltier element, and lead wires for transmitting temperature detection signals from said temperature detector element to an external circuit are led by way of said drive submount; and

an optical fiber for supplying an optical signal is attached to said substrate, one end of said optical fiber being connected to the input portion of said Mach-Zehnder circuit.

11. A layout according to claim 10 wherein said Mach-Zehnder circuit is of single-sided form.